

**WHAT IS CLAIMED IS:**

1. A method for bringing fabric devices online to be accessible from a host system coupled to a fabric, wherein a plurality of fabric devices are coupled to the fabric,  
5 the method comprising:

storing in a persistent repository an indication of which of the fabric devices are online for the host system to be accessible from the host system;

10 following a reboot of the host system, reading the persistent repository to determine which fabric devices were online prior to the reboot; and

requesting the fabric devices that were online prior to the reboot to be brought online for the host system.

15

2. The method as recited in claim 1, further comprising:

receiving a notification that a fabric device is no longer available; and

20 in response to said receiving, updating the persistent repository to reflect that the unavailable fabric device is offline.

25

3. The method as recited in claim 2, wherein said receiving a notification comprises receiving an event from a fabric driver executing on the host system.

4. The method as recited in claim 1, wherein the host system comprises one or more I/O ports, the method further comprising:

30 performing a discovery process in response to said reboot, the discovery process comprising:

determining whether each of the I/O ports is coupled to one or more direct attach devices or to the fabric;

5 for each of the I/O ports coupled to one or more direct attach devices, discovering the direct attach devices and bringing online each direct attach device for the host system; and

10 for each of the I/O ports coupled to the fabric, designating the I/O port as a fabric port without attempting to discover the fabric devices.

15 5. The method as recited in claim 4, wherein said reading the persistent repository and said requesting the fabric devices are performed for one or more of the I/O ports designated as a fabric port.

6. The method as recited in claim 4, wherein the I/O ports comprise Fibre Channel host adapter ports.

20 7. The method as recited in claim 4, wherein each of the I/O ports coupled to one or more direct attach devices comprises a port to a Fibre Channel private loop or point-to-point link.

8. The method as recited in claim 4, wherein said determining whether each of the I/O ports is coupled to one or more direct attach devices or to the fabric comprises:

25 attempting to log-in to the fabric through each I/O port;

if the log-in fails, designating the I/O port as a direct-attach port; and

30 if the log-in is successful, designating the I/O port as a fabric port.

9. The method as recited in claim 1, wherein said requesting the fabric devices that were online prior to the reboot to be brought online comprises requesting a fabric driver to create device nodes within the host system for each device that was online prior to the reboot, wherein each device node provides a mechanism for accessing a corresponding one of the fabric devices through an operating system executing on the host system.

10. The method as recited in claim 1, wherein said storing in a persistent repository comprises:

receiving from a fabric driver an indication of which ones of the fabric devices were successfully brought online; and

in response to said receiving, updating the persistent repository to indicate the ones of the fabric devices that were successfully brought online.

11. The method as recited in claim 1, wherein the fabric comprises a Fibre Channel switched fabric comprising a plurality of Fibre Channel switches.

12. The method as recited in claim 1, further comprising, prior to said reboot:

requesting a fabric driver to provide a list of the fabric devices coupled to the fabric, wherein said fabric driver provides an interface for the host system to said fabric;

receiving the list of fabric devices from said fabric driver;

requesting the fabric driver to online a selected subset of the fabric devices from the list so that the selected subset of fabric devices are accessible from the host system; and

5 wherein said storing comprises updating or creating the persistent repository to indicate which of the fabric devices are online.

13. The method as recited in claim 12, wherein said selected subset of the fabric devices is selected by:

10

an application displaying the list to a user; and

the user selecting one of the listed fabric devices.

15

14. A host system, comprising:

one or more adapter ports for coupling to a fabric, wherein a plurality of fabric devices attached to the fabric are visible to the host system through one of said adapter ports;

20

a fabric driver configured to interface the host system to the fabric;

an application configured to request the fabric driver to bring online a selected subset of the fabric devices for access from the host system;

25

wherein the fabric driver is further configured to attempt to online the selected subset of fabric devices and indicate to the application which ones of the selected subset are successfully online; and

30

wherein the application is further configured to store in a persistent repository an

indication of the fabric devices that are successfully online.

15. The host system as recited in claim 14, wherein the application is further configured to:

5

read the persistent repository following a reboot of the host system to determine which fabric devices were online prior to the reboot; and

10

request the fabric driver to bring online the fabric devices that were online prior to the reboot.

16. The host system as recited in claim 14, wherein:

15

the application is further configured to request the fabric driver to provide a list of the fabric devices attached to the fabric that are visible to the host system through one of said adapter ports; and

20

the fabric driver is further configured to provide the list of fabric devices to the application in response to the request for the list from the application.

17. The host system as recited in claim 16, wherein the application is further configured to:

25

display the list to a user through a graphical user interface; and

provide through the graphical user interface for the system administrator to select devices from the list as the selected subset of the fabric device to be brought online.

18. The host system as recited in claim 14, wherein said fabric driver is further configured to create device nodes within the host system for each device of the selected subset, wherein each device node provides a mechanism for accessing a corresponding one of the subset of fabric devices through an operating system executing on the host system.

19. The host system as recited in claim 14, further comprising a plurality of I/O ports including the one or more adapter ports for connecting to a fabric, wherein the host system is further configured to executed a discovery process comprising:

determining whether each of the I/O ports is coupled to one or more direct attach devices or to the fabric;

for each of the I/O ports coupled to one or more direct attach devices, discovering the one or more direct attach devices and creating an operating system node for accessing each direct attach device; and

for each of the I/O ports connected to the fabric, designating the I/O port as a fabric port without attempting to discover the fabric devices.

20. The host system as recited in claim 19, wherein said discovery process is configured to execute in response to a reboot of the host system, and wherein said application is configured to execute on the host system subsequent to said reboot and said discovery process to:

read the persistent repository to determine which fabric devices were online prior to the reboot; and

request the fabric driver to bring online the fabric devices that were online prior to the reboot.

21. The host system as recited in claim 19, wherein each of the I/O ports coupled to the fabric comprises a Fibre Channel host adapter port.

5 22. The host system as recited in claim 19, wherein each of the I/O ports coupled to one or more direct attach devices comprises a port to a Fibre Channel private loop or point-to-point link.

23. The host system as recited in claim 19, wherein said determining whether  
10 each of the I/O ports is connected to direct attach devices or to the fabric comprises:

attempting to log-in to the fabric through each I/O port;

15 if the log-in fails, designating the I/O port as a direct-attach port; and

if the log-in is successful, designating the I/O port as a fabric port.

24. The host system as recited in claim 14, wherein the application comprises a library configured to provide an interface to said fabric driver, wherein requests to bring  
20 fabric devices online are interfaced to the fabric driver through said library.

25. The host system as recited in claim 24, wherein the library is further configured to:

25 receive from the fabric driver a notification that a fabric device is no longer available; and

update the persistent repository to reflect that the unavailable fabric device is offline.

26. The host system as recited in claim 14, wherein the fabric comprises a Fibre Channel switched fabric comprising a plurality of Fibre Channel switches.

27. The host system as recited in claim 14, wherein the fabric driver  
5 comprises:

a Fibre Channel protocol module configured to perform SCSI protocol operations  
between the host system and the fabric; and

10 one or more Fibre Channel port drivers configured to perform transport layer  
operations between the host system and the fabric;

wherein the Fibre Channel protocol module and the one or more Fibre Channel  
port drivers are part of an operating system kernel on the host system.  
15

28. A computer readable medium having stored thereon data representing  
sequences of instructions, wherein the sequence of instructions are executable by one or  
more processors to implement:

20 storing in a persistent repository an indication of which of the fabric devices are  
online for the host system to be accessible from the host system;

following a reboot of the host system, reading the persistent repository to  
determine which fabric devices were online prior to the reboot; and  
25

requesting the fabric devices that were online prior to the reboot to be brought  
online for the host system.

29. The computer readable medium as recited in claim 28, wherein the  
30 sequence of instructions are further executable by one or more processors to implement:



receiving a notification that a fabric device is no longer available; and

in response to said receiving, updating the persistent repository to reflect that the  
5           unavailable fabric device is offline.

30.   The computer readable medium as recited in claim 29, wherein said  
receiving a notification comprises receiving an event from a fabric driver executing on  
the host system.

31.   The computer readable medium as recited in claim 28, wherein the host  
system comprises one or more I/O ports, wherein the sequence of instructions are further  
executable by one or more processors to implement:

15           performing a discovery process in response to said reboot, the discovery process  
            comprising:

            determining whether each of the I/O ports is coupled to one or more direct  
            attach devices or to the fabric;

20           for each of the I/O ports coupled to one or more direct attach devices,  
            discovering the direct attach devices and bringing online each  
            direct attach device for the host system; and

25           for each of the I/O ports coupled to the fabric, designating the I/O port as a  
            fabric port without attempting to discover the fabric devices.

32.   The computer readable medium as recited in claim 31, wherein said  
reading the persistent repository and said requesting the fabric devices are performed for  
30   one or more of the I/O ports designated as a fabric port.

33. The computer readable medium as recited in claim 31, wherein the I/O ports comprise Fibre Channel host adapter ports.

5 34. The computer readable medium as recited in claim 31, wherein each of the I/O ports coupled to one or more direct attach devices comprises a port to a Fibre Channel private loop or point-to-point link.

35. The computer readable medium as recited in claim 31, wherein said  
10 determining whether each of the I/O ports is coupled to one or more direct attach devices or to the fabric comprises:

attempting to log-in to the fabric through each I/O port;

15 if the log-in fails, designating the I/O port as a direct-attach port; and

if the log-in is successful, designating the I/O port as a fabric port.

36. The computer readable medium as recited in claim 28, wherein said  
20 requesting the fabric devices that were online prior to the reboot to be brought online comprises requesting a fabric driver to create device nodes within the host system for each device that was online prior to the reboot, wherein each device node provides a mechanism for accessing a corresponding one of the fabric devices through an operating system executing on the host system.

25 37. The computer readable medium as recited in claim 28, wherein said storing in a persistent repository comprises:

receiving from a fabric driver an indication of which ones of the fabric devices  
30 were successfully brought online; and

in response to said receiving, updating the persistent repository to indicate the ones of the fabric devices that were successfully brought online.

5           38.    The computer readable medium as recited in claim 28, wherein the fabric comprises a Fibre Channel switched fabric comprising a plurality of Fibre Channel switches.

10           39.    The computer readable medium as recited in claim 28, wherein the sequence of instructions are further executable by one or more processors to implement, prior to said reboot:

15                requesting a fabric driver to provide a list of the fabric devices coupled to the fabric, wherein said fabric driver provides an interface for the host system to said fabric;

                receiving the list of fabric devices from said fabric driver;

20                requesting the fabric driver to online a selected subset of the fabric devices from the list so that the selected subset of fabric devices are accessible from the host system; and

25                wherein said storing comprises updating or creating the persistent repository to indicate which of the fabric devices are online.

                40.    The computer readable medium as recited in claim 39, wherein said selected subset of the fabric devices is selected by:

30                an application displaying the list to a user; and

the user selecting one of the listed fabric devices.

09/24/2016 10:23:01